

TV SERIES

Pauling Will Discuss Work on Vitamin C

BY ARNOLD PIKE

"The evidence shows that ascorbic acid decreases the average incidence of the common cold . . ." so wrote Dr. Linus Pauling in his book "Vitamin C and the Common Cold."

A special telecast on the research done by Dr. Pauling and others on the properties and function of Vitamin C in human nutrition will be seen on "Viewpoint On Nutrition," Sunday, Feb. 20, 7:30 a.m. over KABC-TV, Channel 7. The program featuring Pauling, nutritionist and author Carlton Fredericks and motion picture star Eddie Albert will be repeated at a later date over KLAS-TV in Las Vegas, WKRC in Cincinnati, WSEK in Boston, KOGO in San Diego, KTTV, KTLA, KBSC and other stations throughout the country.

The half-hour telecast delves into effectiveness of Vitamin C in relationship to the common cold as viewed by Pauling and Fredericks. After carefully re-examining the evidence and conducting his own tests, Nobel Prize winner in chemistry Pauling, found that when properly used Vitamin C (ascorbi acid) is thoroughly effective in both the prevention and the alleviation in the common cold and related diseases.

Won Nobel Twice

Research has been the tool of Pauling in his many years as professor of chemistry at Cal Tech and Stanford University. During these years he won two Nobel Prizes (chemistry, 1954; peace, 1962) and many other honors, degrees and awards.

It was Albert Szent-Gyorgyi, a Hungarian investigator in the fields of physiology and biochemistry, who discovered Vitamin C or ascorbic acid which has the chemical formula $C_6H_8O_6$. He and other investigators succeeded in isolating the substance from plant tissues and from the adrenal glands of animals.



Linus Pauling, left, and Carlton Fredericks in television studio.

Long before Vitamin C was linked to the common cold, its relationship to the curing and prevention of scurvy was established. Scurvy is a deficiency disease marked by failure of strength, restlessness, exhaustion, sallow skin, ulcerating gums, fetid breath, tissue hemorrhages, pulmonary troubles and eventual death. The pages of history reveal the high degree of scurvy in the beginning days of sea explorations. When Vasco da Gama made his voyage of discovery of the sea route around Africa to India 100 of his crew of 160 died of scurvy. Fresh fruit and vegetables were scarce in the diets of sailors of that era.

Vegetables Gathered

It wasn't until Capt. James Cook and his three great Pacific voyages during the period of 1768 to 1780 that the value of fresh food became

evident. Whenever the ships under his command reached shore as they traveled from England to Australia, he ordered the sailors to gather fruits, vegetables, berries and green plants. Nettleleaves and wild leeks were boiled with wheat and served at breakfast.

On one trip Cook carried enough sauerkraut, which is a good source of Vitamin C, to give his sailors as much as two pounds of it a week. Not one sailor died of scurvy during Cook's three long Pacific voyages while at the same time crews of other vessels, without fresh food, were being ravaged by scurvy. It wasn't until 1911 that scurvy was discredited to be a deficiency disease—a deficiency caused by lack of Vitamin C in the diet.

Today scurvy, complicated by other deficiency diseases, is found in

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populations devastated by starvation and malnutrition, often as a result of poverty. An intake of about 10 milligrams per day of Vitamin C is enough to provide protection against scurvy for most people.

Up to 10 Grams

The optimum intake of ascorbic acid, the daily amount of this food that is essential for the best of health, is not completely known at this time. "It is my opinion that for most people the optimum daily intake is somewhere between 250 mg and 10 grams," states Dr. Pauling in his book.

"Part of the mechanism of protection against disease is the destruction of bacteria by certain white cells in the blood, the phagocytes. In order to be effective in this way, the phagocytes must have a given concentration of ascorbic acid in them. This fact provides a partial explanation of the effectiveness in providing protection against bacterial infections."

In research by Pauling, Fredericks and other nutritionists, scientists and professional people, it has been ascertained that Vitamin C is essential for the synthesis of collagen—a fibrous protein—connective tissue which is responsible for the strength of blood vessel walls, bones, skin, teeth and other parts of the body. A lack of ascorbic acid involves a deficiency of connective tissue. The bleeding which appears in scurvy, for instance, is a consequence of this weakness in the intercellular substance.

Some Unknowns

The mechanism of the effectiveness of Vitamin C against viral infections, such as the common cold, is not completely known at this time. "I have formulated the hypothesis that effectiveness of ascorbic acid in providing protection against virus dis-

eases results from its function in the synthesis and activity of interon in preventing the entry of virus particles into the cell," Pauling wrote.

The common cold has a devastating effect on Americans annually with millions of dollars being lost not only in wages as a result of being off the job but being spent on medications to reduce the physical discomfort of colds. Overeating of starches and sweets, insufficient rest, emotional tension, overexposure to cold temperatures and temperature variations, lack of essential amino acids, other nutrients, certain minerals and vitamins including Vitamin C may be contributing causes to incidence of colds.

Vitamin C is described in medical literature as "virtually nontoxic." It is a food substance found in citrus foods such as oranges, grapefruit, pineapples, lemons, limes, tomatoes, and in green leafy vegetables — spinach, mustard greens, turnip greens as well as brussel sprouts, asparagus, cranberries and gooseberries.

The ascorbic acid in food is easily destroyed by cooking at high temperatures or too long. It is easily oxidized and lost when orange or other citrus fruit juices are exposed to the air such as when a glass of juice is left uncovered and exposed to the air.

Needed Daily

Vitamin C is water soluble and is not stored in the body like other vitamins and nutrients; hence, for optimum health and resistance to colds and other infections, Vitamin C in the daily diet is recommended by Pauling and other authorities including the Food and Nutrition Board of the National Research Council. The daily diet should include at least a glass of citrus juices, fresh if possible, servings of at least one green leafy vegetable, steamed if possible, as well as raw salads of mixed greens plus protein in form of meat, fish, poultry, dairy products, nuts or seeds, and whole fruit. A balanced diet may provide, depending upon the quality of the food eaten and choice of greens and juices, from 100 to 300 mg of ascorbic acid.

"An investment in high Vitamin C intake is a profitable one," sums up Fredericks. "A deficiency carries penalties which are irreversible."

Vitamin C has been a familiar item in health food stores for many years and it has been used in the form of supplements by millions of Americans. How much one needs of it daily is an individual matter. Prof. Roger J. Williams has stressed in many of his books that it is unlikely that any one person is exactly the average man. In considering the problem of protection against the common cold or other ailments we must recognize that people differ from one another and so do their nutritional requirements.

Since the modern diet includes such processed and cooked food it often contains less than the optimum amount of Vitamin C, according to Pauling who says "for most people it is advisable to include additional Vitamin C in the diet."